

## AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application.

### 5 LISTING OF CLAIMS:

1. (Currently Amended) A personal simulator system having a display device for displaying simulated scenery depicting motion; said system comprising:

10 A motion control device for indicating a desired change in the position of said system;

A support plate;

A pedestal support rigidly connected to said support plate at one end and having a coupling joint at the other end;

15 A motion plate for supporting a rider, said motion plate coupled to said coupling joint; and

~~A plurality of drive assemblies mounted on said support plate, each of said drive assemblies having a motor coupled to said motion plate by a drive arm linkage and a controller for generating a motor control signal to reposition said motion plate by changing the relative orientation of said drive arm with respect to the other drive arms~~

20 A plurality of AC fractional horsepower motors fixedly mounted on said support plate;

25 A plurality of drive arm linkages, each coupled at one end to a respective one of said plurality of AC fractional horsepower motors and, at the other end, to said support plate; and

30 A controller for generating a motor control signal to cause each of said plurality of AC fractional horsepower motors to cooperatively either reposition said motion plate by changing the relative orientation of at least one of said drive arms with respect to at least one other drive arm or for generating a dynamic

boost motor control signal to maintain the current position of said at least one drive arm, said controller responsive to a positional control signal generated by said motion control device.

5                    2.        (Currently Amended)        The personal simulator of claim 1 further comprising a ~~display device positioned proximate~~ chair coupled to said motion plate, said chair having an internal speaker to generate sound and chair vibrations.

10                   3.        (Currently Amended)        The personal simulator of claim 2 wherein said support plate comprises an aluminum support plate having a ballast chamber further comprising means for generating audio/video signals for display on said display device and motion control signals indicating a desired position of said motion plate.

15                   4.        (Currently Amended)        The personal simulator of claim 3 wherein said controller comprises:  
~~Means for receiving motion signals synchronized with said audio/video signal; and~~

20                   Means for generating a ~~frequency~~ three phase variable voltage pulse width modulated signal for driving each of said motors where each phase is applied to a different winding of each of said AC fractional horsepower motors; and

25                   A DC power supply having a sink for dissipating regenerative energy during rapid deceleration of one or more of said motors.

30                   5. (Currently Amended)        The personal simulator of claim 4 wherein said controller further comprises means for increasing motor torque at low speed by holding the applied voltage to each winding of each of said motors constant for the duration of the applied dynamic boost.

6. (Currently Amended) The personal simulator of claim 4 wherein said controller further comprises means for increasing motor torque at zero speed by holding the applied voltage to each winding of each of said motors constant for the duration of the applied dynamic boost.

7. (Cancelled)

8. (Original) The personal simulator of claim 1 wherein said plurality of drive assemblies comprise a first and a second drive assembly coupled proximate to respective first and second adjacent corners of said motion plate and a third drive assembly coupled midway between adjacent corners opposite from said first and second adjacent corners.

9. (Original) The personal simulator of claim 1 wherein said plurality of drive assemblies comprise at least three drive assemblies connected to said support plate in a generally triangular configuration.

10. (Original) The personal simulator of claim 1 wherein said pedestal support is coupled to the center of said support plate and said plurality of drive assemblies comprise at least three drive assemblies connected to said support plate in a generally triangular configuration proximate to the periphery of said support plate.

11. (Original) The personal simulator of claim 1 wherein said support plate comprises a rigid metal plate capable of supporting a static load of at least 300 pounds.

12. (Original) The personal simulator of claim 11 wherein said support plate further comprises ballast.

13. (Cancelled)

14. (Cancelled)

15. (Currently Amended) The personal simulator of claim 44  
12 wherein said drive arm linkage further comprises:

A lower eyebolt;

A first rod end connector, connected to said lower eyebolt, for  
rotatably coupling said drive arm linkage to said crank;

An upper eyebolt;

A second rod end connector, connected to said upper eyebolt, for  
rotatably coupling said drive arm linkage to said motion plate; and

A rigid push rod connecting said upper eyebolt to said lower  
eyebolt.

16. (Original) The personal simulator of claim 15 wherein said  
motion plate comprises:

A flange coupled to said upper eyebolt by said second rod end  
connector; and

Means for coupling said motion plate to said universal joint.

17. (Currently Amended) A single person motion simulator  
comprising:

A display device for displaying a video signal;

Means for supporting a person proximate to said display device;

Means for receiving and interpreting motion commands;

Means, responsive to said receiving and interpreting means, for  
positioning said support means in at least three axis of motion  
synchronized with said video signal, said positioning means including at  
least three fractional horsepower AC motors coupled to said supporting

means for controlling said three axis of motion; and

An enclosure surrounding said support means and said control means;

A controller that receives motion control signals and, responsive to said motion control signals, generates a three phase variable voltage pulse width modulated signal for driving each of said motors and for maintaining torque within a selected range while operating said motors at low operating speeds; and

A DC power supply having a sink for dissipating regenerative energy during rapid deceleration of one or more of said motors.

18. (Currently Amended) The single person motion simulator of claim 17 wherein said ~~controller comprises:~~ support means comprises a chair having an internal speaker to generate sound and chair vibrations

~~Means for receiving motion signals; and~~

~~Means for generating a frequency modulated signal for driving said AC motors.~~

19. (Currently Amended) The single person motion simulator of claim 18 wherein said ~~controller~~ support means further comprises ~~means for increasing motor torque at low speed~~ an aluminum support plate having a ballast chamber.

20. (Cancelled)

21. (Cancelled)

22. (Currently Amended) A simulator system having a platform for positioning a rider and for displaying audio and video signals to said rider, said simulator system comprising:

Computer means for generating said audio and video signals and motion control information synchronized with said audio and video signals;

A motion platform including:

Linkages, coupled to said motion platform, for controlling the pitch, roll and heave of said motion platform;

A plurality of induction motors, coupled to said linkages for controlling said linkages;

A controller, associated with each motor, coupled to said computer means and adapted to receive control information from said computer means, said controller, in response to said control information, adapted to generating motor control signals to position said motion platform; said controller further adapted to generating a dynamic boost signal for maintaining torque within a selected range while operating said motors at low or zero operating speeds; and

A DC power supply having a sink for dissipating regenerative energy during deceleration of said motors.

23. (Currently Amended)      The simulator system of claim 22 wherein each of said induction motors comprises a fractional horsepower AC motor.

24. (Original)      The simulator system of claim 23 wherein said controller generates a pulse width modulated signal having a variable AC voltage and variable frequency for controlling said fractional horsepower AC motors.

25. (Original)      The simulator system of claim 23 wherein said controller is adapted to selectively increase the torque of said fractional horsepower AC motors.

26. (Cancelled)

27. (Currently Amended) A personal simulator system for spatially positioning a rider and for displaying audio and video signals to said rider, said simulator system comprising:

A motion platform supported by a pedestal and a plurality of linkages, said motion platform adapted to receive and retain said rider in proximity to said displayed audio and video signals;

~~Means, coupled to said linkages, for controlling a plurality of induction motors to, coupled to said linkages, to position the positioning of~~ said motion platform responsive to and synchronized with the displayed audio and video signals; said controlling means adapted to maintain torque of said induction motors within a selected range while operating said induction motors at low operating speeds; and

A DC power supply having a capacitor for dissipating regenerative energy during rapid deceleration of said motion platform.

28. (Currently Amended) The personal simulator system of claim 27 ~~further comprising: means for storing regenerative energy developed by a change in direction of said motion platform wherein said~~ controlling means further comprises means for increasing motor torque at zero or low speed by applying a DC voltage of between  $\pm 25$  volts to about  $\pm 50$  volts to at least two windings of each of said induction motors.

29. (Currently Amended) The personal simulator system of claim 27 wherein said controlling means further comprises:

A plurality of controllers, each of said controller dedicated to ~~one of three~~ an axis of motion of said motion platform, for receiving a positional reference and calculating the difference between the current position of said motion platform and the positional reference, said controller determining the rate of change necessary to achieve said positional reference;

A plurality of fractional horsepower AC motors, each coupled to one of said plurality of controllers for generating torque for changing and maintaining the position of said motion platform; and

Means for coupling said plurality of fractional horsepower AC motors to said plurality of linkages.

30. (Cancelled)

31. (Currently Amended) A personal simulator system for spatially positioning a rider and for displaying audio and video signals to said rider, said simulator system comprising:

A motion base ~~adapted to receive and retain said rider;~~

A chair attached to said motion base, said chair having an internal speaker to generate sound and chair vibrations.;

A motion control device;

Means, coupled to said motion base and said motion control device, for controlling the positioning of said motion base in response to commands generated by said rider, said controlling means adapted to receive motion control signals from said motion control device and, responsive to said motion control signals, generating a three phase variable voltage pulse width modulated signal for driving each of a plurality of induction motors and for maintaining torque of said induction motors within a selected range while operating said induction motors at low operating speeds; and

A DC power supply having a sink for dissipating regenerative energy during rapid deceleration of one or more of said motors.

32. (Currently Amended) The personal simulator system of claim 31 wherein said controlling means comprises:

Means for detecting a motion request generated by at least one of the following: a joystick, a steering wheel, an accelerator, a motion



detector, the Internet, a multiplayer video game or a video camera detector; and

Means for converting detected motion requests to motion commands, said converting means coupled to said motion base.

33. (Original)        The personal simulator system of claim 32 wherein said motion base comprises a two-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

34. (Original)        The personal simulator system of claim 32 wherein said motion base comprises a three-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

35. (Original)        The personal simulator system of claim 32 wherein said motion base comprises a four-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

36. (Original)        The personal simulator system of claim 32 wherein said motion base comprises a four-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

37. (Original)        The personal simulator system of claim 32 wherein said motion base comprises a five-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

38. (Original)        The personal simulator system of claim 32 wherein said motion base comprises a six-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

39. (Original)        The personal simulator system of claim 31 further comprising:

A game box for generating a game where a series of linked scenery images are displayed, said game box coupled to a plurality of remote players and to said motion base;

A game pad for generating rider input associated with said game generated by said game box; and

A programmable interface circuit, coupled to said game pad and to said game box for converting changes in said plurality of linked scenery images to motion and for controlling said motion base to track the changes in said linked scenery images.

40. (Original)        The personal simulator system of claim 39 wherein said motion base comprises a two-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

41. (Original)        The personal simulator system of claim 39 wherein said motion base comprises a three-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

42. (Original)        The personal simulator system of claim 39 wherein said motion base comprises a four-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

43. (Original)        The personal simulator system of claim 39 wherein said motion base comprises a four-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

44. (Original)        The personal simulator system of claim 39 wherein said motion base comprises a five-axis motion base where each axis is controlled by a fractional horsepower electrical motor.

45. (Original)        The personal simulator system of claim 39 wherein said motion base comprises a six-axis motion base where each axis is controlled by a fractional horsepower electrical motor.